

Christopher A. Stone

Education

- 1994–2000 Carnegie Mellon University Pittsburgh, PA
Ph.D. Computer Science
Dissertation: *Singleton Types and Kinds for Typed Intermediate Languages*
Committee Chair: Professor Robert W. Harper.
M.S. Computer Science, 1998
- 1990–1994 Carnegie Mellon University Pittsburgh, PA
M.S. Mathematics
B.S. Mathematics/Computer Science, with University Honors
B.S. Physics, with University Honors

Awards

- ACM SIGPLAN Most Influential PLDI Paper Award (2006, for 1996)
National Defense Science and Engineering Graduate Fellowship (1994–1997)

Employment

- Professor of Computer Science (2013-present)
Associate Professor of Computer Science (2006–2013)
Assistant Professor of Computer Science (2000–2006)
Harvey Mudd College, Claremont, CA
- Faculty, Part-Time (2007–2012)
Jet Propulsion Laboratory, Pasadena, CA

Research Interests

Type systems, optimizing compilers, concurrency, object calculi, programming language design, and applications of constructive logic.

Grants

- Christopher A. Stone and Melissa E. O’Neill, *SHF:Small:RUI: Observationally Cooperative Multithreading*, \$375,395 National Science Foundation Grant, 2012–15. Includes funding to provide summer research experiences to 18 undergraduates over 3 years.
- Christopher A. Stone and Melissa E. O’Neill, *SHF:Small:RUI: Observationally Cooperative Multithreading*, \$308,875 National Science Foundation Grant, 2009–12. Includes funding to provide summer research experiences to 15 undergraduates over 3 years.
- HMC Fletcher Jones Research Grant, Summer 2014.
- Christopher A. Stone, Mellon Sabbatical Enhancement Grant, Summer 2006.
- Andrej Bauer and Christopher A. Stone, *Applications of Realizability Theory in the Design of Data Structures*, USA-SLOVENIA Cooperation in Science and Technology Travel Grant, 2005–06.
- HMC Beckman Research Grant, Summer 2005.
- HMC Beckman Research Grant, Summer 2001.

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Courses Taught

CS 5 Introduction to Computer Science (F10)
CS 42 Principles and Practice of Computer Science (F11)
CS 60 Principles of Computer Science (F01, S12, S16)
CS 70 Data Structures and Program Development (F04–S06, S08–F08, S10–F11, S13)
CS 81 Computability and Logic (S04, F10–F11, F12)
CS 125 Computer Networks (S16)
CS 131 Programming Languages (F00–S04, F07–S08, S09–S10, S15)
CS 132 Compiler Design (S01, S03, S05, F07, S09, S11, S15)
CS 140 Algorithms (F15)
CS 189 Programming Practicum (F05–S06, F15–S16)
WRIT 1 Introduction to Academic Writing (F10, F12, F15)

Student Advising Roles

Computer Science Clinic Projects:

QB Inc. (2000–01), Qualcomm (01–02), Northrop Grumman (02–03), SnapTrack/Qualcomm (03–04), Green Hills Software (Summer 05), NC4 (05–06), Laserfiche (Spring 06), RealNetworks (07–08), CODEE (08–09), DreamWorks (09–10), Sandia (10–11), CODEE (10–11), LANL(11–12), Apatite to Zircon (12–13), VMWare (12–13), Rubicon (14–15), LLNL (15–16).

Student Research Projects:

Proof Checking for Mathematical English

with Matthew Valentine ('16), Felis Perez ('17), Rohan Shankar ('17), Daniel Zhang ('18)

Observationally Cooperative Multithreading (joint with Prof. Melissa O'Neill)

with Bartholomew Broad ('10), Samuel Just ('10), Alejandro Lopez-Lago ('11), Kwang Ketcham ('10), Joshua Peraza ('09);

Sonja Bohr ('11), Adam Cozzette ('12), Joe DeBlasio ('11), Julia Matsieva ('11), Stuart Pernsteiner ('12), Ari Schumer ('13); Xiaofan Fang (Po '14), Sean Laguna ('12), Stephen Levine ('13), Jordan Librande ('13), Mary Rachel Stimson ('13),

Joe Agajanian ('14), Jeb Brooks ('14), Joey Klonowski ('14), Ki Wan Gkoo ('15), Alex Gruver ('15), Chloe Calvarin ('16), Joshua Landgraf (Po '16), John Phillipot ('16), Jesse Werner ('16), Savannah Baron ('17), Alec Griffith ('17), Alice Szeliga ('17),

Matthew Bae ('17), Vinh Hoang ('17), Rohin Lohe ('17), Jincheng Wang ('17), Bailey Ahn ('18), Tony Zhang ('18)

“P” Aliasing-Free Language

with Andrew Carter ('13), Dietrich Langenbach ('13), Xanda Schofield ('13)

Checkable Sequence Language (joint with Prof. Robert Keller and Yu-Wen Tung, JPL)

with Heather Justice ('09), Daniel Furlong ('12), Andrew Carter (13).

Marshall: an application of Abstract Stone Duality, with Andrew Hunter ('09).

Software Transactional Memory in Haskell,

with Andrew Hunter ('09), Phil Miller ('08), Chris Roberts ('08).

Quantum Computing, with Cris Cecka ('06).

Types for Extensible Objects, with Jonah Cohen ('05).

Adding Views to Cyclone, with Elmer Kim ('03).

Equivalence Algorithms for Recursive Types, with Andrew Schoonmaker ('01).

MeaseL Project (joint with Prof. Joshua Hodas)

with Michael Allen ('02), Edward Miller ('03),

Peter Henry (Pom '02), Melissa Chase ('03), George Kuan ('04).

Faculty Advisor, CS computer systems staff (2004–06, 2016–17).

Faculty Advisor, Claremont Student ACM Chapter (2007–12).

Campus Service Activities

Research Committee, 2014–16.
Institutional Review Board, 2014–16.
Core Curriculum Working Group 2015–16.
Presentation Days Committee, 2002–2005, 2011–12 (co-chair), 2014–15.
Scholarly Standing Committee, 2004–05 and 2012–13.
Writing Committee 2010–11.
Computing Committee, 2000–03 and (as chair both years) 2008–10.
Teaching and Learning Committee, 2007–08.

Professional Activities

Reviews for the IEEE Logic in Computer Science Conference (LICS), ACM International Conference on Functional Programming (ICFP), ACM SIGCSE Technical Symposium on Computer Science Education, ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE), ACM Principles of Programming Languages Conference (POPL), Computer Science Logic Workshop (CSL), Information Processing Letters (IPL), ACM International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA), and the Journal of Functional Programming (JFP).

Program Committee Member, ACM SIGPLAN Workshop on Types in Language Design and Implementation (TLDI '10), ACM International Conference on Functional Programming (ICFP '04, ICFP '07), Mathematical Foundations of Programming Semantics (MFPS 24), Workshop on Object-Oriented Developments (WOOD '03).

Visitor, Faculty of Mathematics and Physics, University of Ljubljana, Slovenia, 2013–14.

Invited Talk with Andrej Bauer, *Brazilian Type Checking*, Workshop on Semantics of Proofs and Certified Mathematics, Institute Henri Poincare, Paris, France, May 2014.

Invited Talk, *Fixed Points on Lattice and Data Flow Analysis*, University of Ljubljana, November 2013.

Invited Talk, *Applied Logic*, Reed College, November 2012.

Chair, 2012 and 2013 CRA “Outstanding Undergraduate Researcher Award” Committees.
Additionally, member of the 2011 award committee.

Workshop Co-Chair, 2009 and 2010 ACM International Conferences on Functional Programming (ICFP '09 and ICFP '10).

General Chair, 2008 and 2009 International Workshops on Foundations of Object-Oriented Languages (FOOL '08 and FOOL '09).

Program Chair, 2006 International Workshop on Foundations and Developments of Object-Oriented Languages (FOOL/WOOD '06).

Invited Visitor, Faculty of Mathematics and Physics, University of Ljubljana, Slovenia, June–October 2006.

Invited Talk, *Applied Logic*, HMC Stauffer Series, July 2009.

Invited Talk with Andrej Bauer, *From Theories to Signatures*, Mathematical Foundations of Programming Semantics (MFPS 20) Special Session on Logical Foundations and Programming Semantics, May 2004.

Invited Talk, *Extensional Equivalence and Singleton Types*, UCLA, March 2004.

Book Chapters

- Christopher A. Stone, Type Definitions. In Benjamin C. Pierce, editor, *Advanced Topics in Types and Programming Languages*, MIT Press, 2005.
- Robert Harper and Christopher Stone, A Type-Theoretic Interpretation of Standard ML. In Gordon Plotkin, editor, *Proof, Language and Interaction: Essays in Honour of Robin Milner*, MIT Press, 2000.

Journal Papers

- Andrej Bauer and Christopher A. Stone. RZ: a Tool for Bringing Constructive and Computable Mathematics Closer to Programming Practice, *Journal of Logic and Computation*, 2009. Preliminary version presented at the Third Conference on Computability in Europe (CiE 2007), LNCS 4497, July 2007.
- Christopher A. Stone and Robert Harper. Extensional Equivalence and Singleton Types. *ACM Transactions in Computational Logic*, 7(4), October 2006.
- Christopher A. Stone. Extensible Objects Without Labels. *ACM Transactions on Programming Languages and Systems*, 26(5), September 2004. Preliminary version presented at the Ninth International Workshop on Foundations of Object-Oriented Languages (FOOL 9), January 2002.
- Jon G. Riecke and Christopher A. Stone. Privacy via Subsumption. *Information and Computation* 172(1): 2-28, 2002. Preliminary version presented at the Fifth International Workshop on Foundations of Object-Oriented Languages (FOOL 5), January 1998.
- J. Kadane, C. Stone and G. Wallstrom. The Donation Paradox for Peremptory Challenges. *Theory and Decision*, 47(2), October 1999.
- R.E. Valdes-Perez and C.A. Stone. Systematic Detection of Subtle Spatio-Temporal Patterns in Time-Lapse Imaging. II. Particle Migrations. *Bioimaging* 6(2): 71-78, 1998.
- Edoardo Biagioni, Ken Cline, Peter Lee, Chris Okasaki, and Chris Stone. Safe-for-Space Threads in Standard ML, *Higher-Order and Symbolic Computation*, 11(2), 1998. Preliminary version presented at the Second SIGPLAN Workshop on Continuations, January 1997.

Conferences, Workshops, and Posters

- Andrej Bauer, Gaëtan Gilbert, Philipp Haselwarter, Matija Pretnar and Christopher A. Stone. *Design and Implementation of the Andromeda Proof Assistant*, 22nd International Conference on Types for Proofs and Programs (TYPES 2016).
- Melissa E. O'Neill and Christopher A. Stone. *Making Impractical Implementations Practical: Observationally Cooperative Multithreading Using HLE*, 10th ACM SIGPLAN Workshop on Transactional Computing (TRANSACT 2015).
- C.A. Stone, A. Carter, H.L. Justice, R. Keller, and Yu-Wen Tung. *Improved Modeling and Validation of Command Sequences using a Checkable Sequence Language*, IEEE Aerospace Conference, 2012.
- Christopher A. Stone, Melissa E. O'Neill, and The OCM Team, *Observationally Cooperative Multithreading*. ACM International Conference Companion on Object Oriented Programming Systems Languages and Applications (SPLASH '11), Portland, OR, 2011.

- Christopher A. Stone. *Observationally Cooperative Multithreading*. SoCal Programing Languages and Systems Workshop, Los Angeles, CA, 2010.
- Christopher A. Stone. *Nifty Assignments: Random Art*. 40th ACM SIGCSE Technical Symposium on Computer Science Education, Chattanooga, TN, 2009.
- Andrej Bauer and Christopher A. Stone. *Specifications via Realizability*. Constructive Logic for Automated Software Engineering Workshop (CLASE 2005), Edinburgh, April 2005.
- David Tarditi, Greg Morrisett, Perry Cheng, Chris Stone, Robert Harper and Peter Lee. *Retrospective on "TIL: A Type-Directed Optimizing Compiler for ML"*. 20 Years of the ACM SIGPLAN Conference on Programming Language Design and Implementation (1979-1999).
- Christopher A. Stone and Robert Harper. *Deciding Type Equivalence in a Language with Singleton Kinds*. 27th SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL '00). Extended version appears as Carnegie Mellon University Technical Report CMU-CS-99-155, 1999.
- Greg Morrisett, David Tarditi, Perry Cheng, Chris Stone, Robert Harper and Peter Lee. *The TIL/ML Compiler: Performance and Safety Through Types*, 1996 Workshop on Compiler Support for Systems Software.
- David Tarditi, Greg Morrisett, Perry Cheng, Chris Stone, Robert Harper and Peter Lee. *TIL: A Type-Directed Optimizing Compiler for ML*. Proceedings of the ACM SIGPLAN '96 Conference on Programming Language Design and Implementation, May 1996.

Technical Reports

- Christopher A. Stone and Andrew P. Schoonmaker. *Equational Theories for Recursive Types*. Harvey Mudd College Technical Report, 2005.
- Leaf Petersen, Perry Cheng, Robert Harper, and Chris Stone. *Implementing the TILT Intermediate Language*. Carnegie Mellon University Technical Report CMU-CS-00-180, 2000.
- Karl Crary, Robert Harper, Perry Cheng, Leaf Petersen, and Chris Stone. *Transparent and Opaque Interpretations of Datatypes*. Carnegie Mellon University Technical Report CMU-CS-98-177, 1998.
- Robert Harper and Chris Stone. *An Interpretation of Standard ML in Type Theory*. Carnegie Mellon University Technical Report CMU-CS-97-147, June 1997.